**4.Intelligence and Education**

 This part of the hand-out presents that I personally performed with secondary school learners. The aim behind it is to demonstrate the relationship between the psychological variable “Intelligence” and learning English as a foreign language.

 Thus, an introduction to the concept all along with different definitions imposed itself before handling the study. A brief historical view to the conception of intelligence and its development from a single static construct up to a multiple intelligences one (theory adopted by an American psychologist and upon which the research was shaped) .Then, a definition to Multiple Intelligences is provided with a clarification of the criteria they must meet to be considered as such. Next, an explanation to the characteristics of these intelligences and their implications for foreign language education will be clarified. After that, the results of the questionnaire completed by first year secondary school English learners will be analysed , and some kinds of activities that favour the eight intelligences and that may be used to teach English in the light of human differences will be proposed .Finally, the chapter will be closed up by a general conclusion.

**4.1 Introduction**

 In the study of educational psychology, no concept is more important than intelligence in trying to react on understanding how children learn as they grow and develop. Its place in the cognitive- intellectual domain is obvious, but it also has a bearing on the physical-motor and social –emotional domains. This is especially true in the adolescence age, when the distinctions among the domains become less sharp.

 The study of this concept is complex, and controversial issues have emerged in recent years. The need for teachers, parents and others involved in the education of children to understand its nature is incontestable. So what exactly is intelligence?

 There is probably no aspect of contemporary psychology that is more misunderstood by the general public than intelligence. Its notion has a profound effect on one’s social status, educational opportunities, and career choices. Even though great importance is attached to intelligence, most of us are unable to define what exactly intelligence is.

**4.2 Defining Intelligence**

 Intelligence is defined in Wikepedia as “Individuals differ from one another in their ability to understand complex ideas, to adapt effectively to environment, to learn from experience, to engage in various forms of reasoning, to overcome obstacles by taking thoughts. Although these individual differences can be substantial, they are never entirely consistent: a given person’s intellectual performance will vary on different occasions, in different domains, as judged by different criteria .Concepts of “intelligence” are attempts to clarify and organize this complex set of phenomena.”(Wikipedia, the free Encyclopedia).

 “A very general mental capability that, among other things, involves the ability to reason, plan, solve problems, think abstractly, comprehend complex ideas, learn quickly and learn from experience. It is not merely book learning, a narrow academic skill, or test-taking smarts. Rather, it reflects a broader and deeper capability for comprehending our Surroundings “catching on”, “making sense” of things, or “figuring out” what to do.” A definition signed by 52 intelligence researchers of “Mainstream Science on Intelligence” in 1994. (From Wikipedia,the free encyclopedia)

 David Wechsler: “the aggregate or global capacity of the individual to act purposefully; to think rationally, and to deal effectively with his environment.”

 **4.3 Intelligence Theories :Smart Speculations over Time**

 Intelligence is probably the most misunderstood aspect in the domain of psychology. We all seem awed by our perception of it in others .No one can deny its importance in shaping one’s social status, educational opportunities, and career choices. In spite of this great importance attached to it, man since the time of Plato (428BC) and even earlier ages, has been inquiring what intelligence is .Yet, still unable to define it appropriately .Since then, theories have come and gone .Each analyzing the drawbacks of the previous one .Some overlapping and developing towards a better comprehension of this complex psychological variable. This development in defining intelligence over time can be traced as follows.

**4.3.1 Time Period One: “Modern Foundations ” (Mid 19th C).**

It was influenced by many great names such as :John Stuart Mill, Francis Galton ,and Charles Darwin . John Mill (2002) theorized his “tabula rosa” or blank slate ,stating that all human beings are born with little, if any, intelligence due to nature. He also stated that no genetic or hereditary factors contributed to intelligence. He claimed that nurture of others made the difference in defining the levels of intelligence. It seems, thus, that nurture bears a considerable weight in defining what intelligence is. But according to scholars, denying the role of nature, heredity, and genetics is pure nonsense.

**4.3.2 Time Period Two : “The Great Schools ”: (End of 19thC)**

 Psychologists of this era tried to explain intelligence by “look inside the mind” (Holly Raatz) to describe the way human beings think. Wilhelm Wundt (1832-1920) and John Dewey(1859-1952) presented two significant perspectives in psychology: Structuralism and Functionalism. However, both lacked convincing research methodology.

**4.3.3 Time Period Three; ” The Great School’s Influence ”: (Early 20THC )**

 This era noticed theoretical and empirical research of Intelligence. The experimentations held By Edward lee Thorndike (1874-1949) in the domain of psychology led to the beginning of Intelligence testing. He became a leader in The United States of America in the application of scientific methods of enquiry to psychology and education. In 1932 Charles Spearman (1904), formed his « Two Factor Theory »,in which « g »= GENERAL INTELLECTUAL FACTOR which pervades all intellectual performances, and « s »= SPECIFIC INTELLECTUAL FACTOR each of which is relevant to just one particular task .During this time period a French psychologist , Alfred Binet (1857-1911),who studied under neurologist Freud and Cachot ,was asked by the French Ministry of Education to establish a test to Parisian school children to see who were in need of a special educational treatment. The test was a success in terms of school results. Since then, the public seems to be convinced that intelligence is what an “intelligence test” measures.

 A good example is Marilyn Vos Savant, the individual with the world’s “highest” recorded score on this Intelligence Quotient “I Q” Test. She is often referred to as the most intelligent person in the world. She even has a reserved column called “Ask Marilyn” in many newspapers and periodicals, where she answers people’s questions. Many people read her column and stand in awe of the logical and precise answers she gives. To cut it short,

whatever intelligence is, Marilyn seems to have a lot of it.

 Toward the end of the "Great Schools' Influence" time period, Jean Piaget, Swiss biologist and philosopher, focused his research on delineating what cognitive structures may be at different stages of development and how they might evolve from one stage to the next.

 Piaget developed a cognitive developmental approach to intellectual development, which is an opposing view to that of Bitnet’s quantitative factor of Intelligence .He was interested in how we think rather than in how much we think, as in the psychometric theories. Piaget theorized that people with the highest levels of intellectual achievements have passed through four separate stages:

a- Sensorimotor Intelligence. (Found in infants. Intelligence characterized by action.)

b- Preoperational Thought. (Found in pre-school and elementary school children.)

c- Concrete operational thought. (Elementary school children-some adolescent and

 adult populations.)

d- Formal Operational Thought. (Starts in adolescence for most people)

**4.3.4 Time Period Four: “Contemporary Exploration ” (Mid20th C)**

 The previous influence of “The Great Schools» time period encouraged the furtherance of the “g” intelligence theories and paved the way for many investigations of Intelligence that led to Multiple Intelligence Theories. Its principle shapers were against the theory of general factor. Among them was Louis Thurstone, T. G. Thurstone.

**4.3.5 Time Period Five: “Current Efforts ”: (Late 20thc till present time)**

 One of the greatest leaders in this period of time is Howard Gardner. He approaches intelligence from a developmental perspective. He opposes intelligence test scores and rather argues for performance based assessment of Intelligence. He tries to explain “how one is smart rather than how smart one is”. Thus, he developed his Theory of Multiple Intelligences, in which he proposes an alternative definition of intelligence based on a radically different view of the mind. He recognized many different and discrete facets of cognition, and acknowledging that people have different cognitive strengths and contrasting cognitive styles. (Gardner 1993:6)

**4.4 Multiple Intelligences Defined.**

Many EFL teachers still wonder whether there is a relationship between learning styles and multiple intelligences, and whether they are the same thing or not. For example, we talk about perceptual learning styles, such as visual and kinesthetic, in almost, the same terms as special and bodily-kinesthetic intelligences. There is bound to confusion. The following manifest example sorts out the concepts.

 Let’s say there are two people who want to develop their musical intelligence. The first person goes to the music store and buys several of his favourite CD’s. He takes them home, listens to them, and tries to play what he hears. The second person goes to the music store and buys sheets of composed music. She takes the selection home, studies and reads the music, and then sits down to play. Both of these individuals are working to develop their musical intelligence, but they do it in different ways. The preferredlearning style for music for thefirst person is auditory; whereas, for the second it is visual. The preferred style may vary from task to task.

Multiple Intelligences theory is framed in light of biological origins. In order to arrive at the list of eight intelligences, Gardener consulted evidence from several different sources. He wanted to make a clear distinction between types of intelligence with its biological origins. He identified the following basic criteria that each intelligence must meet to be considered as intelligence.

**4.4.1 Proofs to the Existing Intelligences.**

 Howard Gardner believes that each intelligence should meet the following criteria to be considered an intelligence.

1. **Brain damage.**

 When people suffer brain damage as a result of an injury, one or many intelligences may be damaged. For example, if a person has a damage in the Broca area (the left frontal lobe) his linguistic intelligence may be greatly affected. The individual may have great trouble reading, writing and speaking, yet still be able to do maths, dance, and sign Gardener actually proposed eight autonomous brain systems. His premise is that because a person can lose ability in one area while others are spared, there cannot simply be a single intelligence.

**b-Exceptional Individual.**

 Gardener actually proposes eight autonomous brain systems. His premise is that because a person can lose the ability in one while others are spared, there cannot simply be a single intelligence.

**c-Developmental History.**

 Each intelligence has its own developmental history, its time of arising in childhood, its time of peaking during one’s life time, and its time of gradual decline. Musical Intelligence for example peaks early, whereas linguistic intelligence can peak very late.

**d-Evolutionary History.**

Each intelligence has its roots in the evolutionary history of man. Archeological evidence proves the existence of early musical instruments .The drawings of The Pharaohs and those of The Primitive Men in the Tassili are vivid examples of spatial intelligence.

**e-Psychological Tests.**

 Psychological studies have proved that intelligences function separately. For example, subjects may master a specific skill, such as solving arithmetic problems, but can’t remember faces .The tasks seem to be independent from each other.

**4.5 The Eight Intelligences**

 Howard Gardner classified the eight Intelligences in accordance to some specific human aspects. These are as follow:

**4.5.1.Bodily-Kinesthetic Intelligence.**

 The ability to use the body to express ideas and feelings and to solve problems. This includes such physical skills as coordination, flexibility, speed and balance.

**4.5.2.Intrapersonal Intelligence**

 The ability to understand one’s, strengths, weaknesses, moods, desires, and intentions. This includes such skills as understanding how one is similar or different from others. How to handle one’s feelings and how to behave when angry or sad.

**4.5.3 Interpersonal Intelligence.**

 It is concerned with the capacity to understand the intentions, motivations, moods, feelings and desires of others. This includes such abilities as being able to live in a group and to interact effectively within it. Educators, salespeople, religious men and political leaders all need a well-developed interpersonal intelligence.

**4.5.4 Linguistic Intelligence**

 It involves sensitivity to spoken and written language, the ability to learn languages, and the capacity to use language to accomplish certain goals. This intelligence includes the ability to effectively use language to express oneself rhetorically or poetically; and also using language as a means to remember information .Writers, poets, lawyers and speakers are among those that Howard Gardner sees as having high Linguistic Intelligence.

**4.5.5.Logical-Mathematical Intelligence.**

 The ability to use numbers effectively and reason well. This includes such skills as understanding the basic properties of numbers and principles of cause and effect, as well as the ability to predict, using simple machines.

**4.5.6. Musical Intelligence.**

The ability to sense rhythm, pitch and melody. This includes such skills as the ability to recognize simple songs and to vary speed, tempo, and rhythm in simple melodies.

**4.5.7 Spatial Intelligence.**

 “A sense of Direction” (Brown, p.94), ie, the ability to sense form, shape, colour, line space. It is the ability to “think in pictures”, to perceive the visual world accurately, and recreate it in the mind or in the paper. This kind of intelligence is highly developed in artists, architect designers and sculptors.

**4.5.8. Naturalist Intelligence.**

 The ability to recognize and classify plants, minerals and animals; including rocks, grass, and all variety of flora and fauna. It is also the ability to recognize cultural artefacts like cars, mobile phones, sneakers…etc.

**4.6 Implications of MI in Foreign Language Learning**

 The reception of the theory of multiple intelligences among educators seems to be very positive. It, in fact, channels a number of educational implications worth stating Armstrong (cited in Christison,98) has synthesized these ideas into four key points that educators find attractive about the theory.

1. **Each Person possesses all Eight Intelligences.**

 Every individual possesses all eight intelligences. They function together in unique ways. Some people have high levels of functioning of almost all intelligences; a few lack the basic aspects of intelligence. Some people are somewhere in between, with some intelligences highly developed, most modestly developed, and one or two underdeveloped.

 b- **Intelligences can be developed.**

 Howard Gardner claims that every individual can develop the capacity of each intelligence to a reasonably high level of performance, with appropriate encouragement, enrichment, and instruction.

**c. Intelligences Work Together.**

 Intelligences function together in complex ways. No intelligence exists by itself in life. Intelligences are always interacting with each other. For example, to make a top model dress, a dress maker has to follow instructions in a magazine (linguistic), calculate the right measures(logical mathematical),transform this measures into an artistic realization(visual spatial),struggle to make it attractive to please others(interpersonal intelligence),and for self-satisfaction and fame(intrapersonal intelligence).

**d. There are Many different Ways to be Intelligent.**

There is no standard list of attributes that one must have to be considered as intelligent.

**4.7 Applied MI**

**M**ultiple **I**ntelligence **T**est for Children (see appendix 1) By Nancy Faris.

Based on Howard Gardner's Seven Intelligences/inspired by MI Test by Spencer Barnard -- MAT Program (ONU -- Kankakee, IL) citing this source: Dr. Howard Gardner, C. A. Armstrong, and the Boulder Center of Accelerated Learning .

**4.7.1 Population under Study.**

The test was applied on first year scientific stream pupils (1AS-S3).A class that embodies 35 pupils of both genders.

**4.7.2 Form of the Test.**

 The test was printed from the internet. It contains 35 statements representing seven intelligences. That is to say, five statements for each intelligence. The intelligences are graded as follows: Linguistic, Logical-Mathematical, Musical, Visual Spatial, Bodily- Kinesthetic, Interpersonal, and Intrapersonal. (See the Multiple Intelligence test below). **4.7.3 Procedure**

 First, we handled a sample of the test to each pupil. Next, we attributed a number to each pupil to write on the top of his test paper, just to avoid them write their names to make them feel at ease and give objective answers while doing. Then, the pupils all together read statement after statement silently ticking the ones that matched their profiles. The unclear statements were orally translated into Arabic to ensure a better comprehension and more objective answers.

**4.7.4 Analysing Informants’ Answers.**

 At the end of the test, the teacher delivered a speech, explaining that it was a test related to the different intelligences everyone has. He guided them to write the specific intelligence name for each group of statements. Next, he drew a table on the chalkboard (see table1) and told the pupils to copy the same one on the back of their test papers. Then, the teacher told every pupil to count the answers he ticked and write the number under the appropriate intelligence case. After that, the teacher collected the tests and counted the number of answers of each intelligence for the whole class. We got the results shown in (table2).

 Finally, the results of the test were represented in a graph that shows the existing intelligences and their rates. (See Graph 1)

**4.7.5 Meeting Learners’ Needs**

 If we analyse the graph, we notice that intelligences rank as follows, from the most to the least dominant one: Logical-Mathematical, Interpersonal, Bodily- kinaesthetic, Intrapersonal, Linguistic, Musical, Visual Spatial. Therefore, the kind of tasks that should be presented through lessons to the learners must be those involving the highly represented intelligences in the classroom. Yet, from time to time, the teacher should deal with exercises that favour those less represented intelligences so that to develop them within the group of learners mainly that of linguistic Intelligence which in this case seems to be underdeveloped.

**4.7.6 Suggested Tasks for each Kind of Intelligence.**

**a- Logical Mathematical Intelligence:**

- Activities involving logic such as “conditional type Zero”. Practice of a grammatical rules trough scientific phenomenon.

Example: If you put water on fire, It boils.

- Activities that involve numbers, calculations and so on.

**b- Interpersonal Intelligence**

It can involve collaborative activities such as:

-Dialogues.

-Project workshops.

-Pair Work/Group Work.

-Solving problems and resolving conflicts.

**c-Bodily-Kinaesthetic Intelligence**

Activities that involve the body.

-Using gestures, mimes, touches.

-Transforming teacher’s or mate’s gestures into meaningful sentences.

**d-Intrapersonal Intelligence.**

Teacher should encourage pupils to keep diaries.

-Have pupils take responsibility for their own learning by doing some extensive reading to topics of their choice and that match their personal interests. Let them summarize what they have read, too.

**e-Linguistic Intelligence**:

-Teachers can help pupils develop their linguistic intelligence by:

-Providing things to look at, listen to, and write about.

-Creating opportunities for interaction among pupils and between pupils and teacher.

**f-Musical Intelligence**

-Use of songs and poems.

-Drills for pronunciation such as words that rhyme and homonyms.

**G-Visual Spatial Intelligence**:

-Using visual aids such as: charts ,maps, pictures etc…

-Producing words or sentences through examining pictures.

**h. Naturalist Intelligence**:

-Speaking about the world outside the classroom.(Mobile phones-New cars-Fashion and different marks of clothes…)

**4.8 Conclusion**

 The understanding of learning principles that have been presented and the various ways of understanding what intelligence is, lead to say that there are aspects of language learning that may call upon a conditioning process; other aspects require meaningful cognitive process; others depend upon the security of supportive fellow learners interacting freely and willingly with one another. Still others are related to one’s total intellectual structure .Each aspect is important, but there is no consistent combination of theories that works for every context of Second/Foreign Language Learning. The theory of “Multiple Intelligences” has been principally based upon findings in the biological and cognitive sciences, and it first needs to be thoroughly discussed and tested in those areas before it provides a handbook or a white paper for any practitioner in the field of education. Even good ideas have been ruined by premature attempts at implementation, and no one is totally certain of the goodness of the idea of multiple intelligences.

**APPENDIX 1**: Multiple Intelligence Test for Children By Nancy Faris

Answer the following questions by checking on the sentences that are most like you.



**Appendix2 :** (Table1-a sample of a pupil’s answer)

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Linguistic Intelligence | Logical Mathematical Intelligence | Musical Intelligence | Visual Spatial Intelligence | Bodily-Kinesthetic Intelligence | Interpersonal Intelligence | Intrapersonal Intelligence |
| 4/5 | 2/5 | 5/5 | 2/5 | 4/5 | 4/5 | 3/5 |

**Appendix 3:** (Table 2-the whole class number of answers for each intelligence)

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Linguistic Intelligence | Logical Mathematical Intelligence | Musical Intelligence | Visual Spatial Intelligence | Bodily-Kinesthetic Intelligence | Interpersonal Intelligence | Intrapersonal Intelligence |
| 95/175 | 132/175 | 94/175 | 91/175 | 113/175 | 129/175 | 103/175 |

**Appendix 4:** Figure 1: Results of existing Intelligences in the classroom